

WE CLAIM:

1. An X-ray optical system for examination of a sample selected from a plurality of samples of a sample library, the system comprising:
 - an X-ray source from which X-ray radiation is guided onto the selected sample;
 - a flat plate on which the plurality of samples is disposed;
 - an X-ray detector for receiving radiation from the selected sample;
 - means for displacing said flat plate in an xy-plane, substantially parallel to an upper surface of said plate;
 - means for displacing said flat plate in a z-direction, substantially perpendicular to said xy-plane;
 - means for rotating said flat plate about a first axis parallel to said z-direction; and
 - means for rotating said flat plate about a second axis extending through said xy-plane.
2. The system of claim 1, wherein said first axis and said second axis intersect.
3. The system of claim 2, wherein said flat plate can be displaced such that each sample of the sample library can be displaced into a point of intersection between said first axis and said second axis.
4. The system of claim 1, wherein at least one of said source, said detector, and said flat plate are disposed to be rotatable about a third axis.

5. The system of claim 4, wherein said first axis, said second axis and said third axis are substantially orthogonal.
6. The system of claim 1, wherein said source and said detector can be positioned on a same side of said flat plate.
7. The system of claim 1, wherein said source and said detector can be positioned on opposite sides of said flat plate.
8. The system of claim 1, wherein said flat plate has openings at sample positions for transmission measurements.
9. The system of claim 1, wherein said flat plate is impermeable to said X-ray radiation for reflection measurements.
10. A method for examining a plurality of samples disposed on a flat plate as a sample library, the method comprising the steps of:
 - a) selecting one of said plurality of samples and positioning said selected sample into a measuring position for illumination with X-ray radiation from an X-ray source and for passage of X-ray radiation from said selected sample to an X-ray detector;
 - b) displacing said selected sample in at least one of an x-direction lying in a plane of said flat plate, a y-direction perpendicular to said x-direction and lying in said plane of said flat plate, and a z-direction perpendicular to both said x-direction and said y-direction;
 - c) rotating said selected sample about at least one of a first axis perpendicular to said x-and said y-directions and a second axis lying in said plane of said flat plate, wherein

steps b) and c) are performed to optimize radiation from said selected sample on said detector; and
d) carrying out a measurement of said selected sample followings steps a) through c).

11. The method of claim 10, wherein said selected samples is moved about a respective measuring position in said plate plane to optimize X-ray radiation scattered to said detector.
12. The method of claim 10, wherein said selected sample is moved linearly in said z-direction.
13. The method of claim 10, wherein at least one motion of said selected sample along said x-direction, along said y-direction, along said z-direction, about said first axis, and about said second axis is wobbled during a respective measurement.